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CDC Health Advisory

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Influenza-Associated Pediatric Mortality and *Staphylococcus aureus* co-infection

CDC is requesting that states report all cases of influenza-related pediatric mortality during the 2007-2008 influenza season. This health advisory contains updated information about influenza and bacterial co-infections in children and provides interim testing and treatment recommendations.

Background:

Since 2004, the Influenza-Associated Pediatric Mortality Surveillance System, part of the Nationally Notifiable Disease Surveillance System, has collected information on deaths among children due to laboratory-confirmed influenza, including the presence of other medical conditions and bacterial infections at the time of death. From October 1, 2006 through September 30, 2007, 73 deaths from influenza in children were reported to CDC from 39 state health departments and two city health departments. Data on the presence (or absence) of bacterial co-infections were recorded for 69 of these cases; 30 (44%) had a bacterial co-infection, and 22 (73%) of these 30 were infected with *Staphylococcus aureus*.

The number of pediatric influenza-associated deaths reported during 2006-07 was moderately higher than the number reported during the two previous surveillance years; the number of these deaths in which pneumonia or bacteremia due to *S. aureus* was noted represents a five-fold increase. Only one *S. aureus* co-infection among 47 influenza deaths was identified in 2004-2005, and 3 co-infections among 46 deaths were identified in 2005-2006. Of the 22 influenza deaths reported with *S. aureus* in 2006-2007, 15 children had infections with methicillin-resistant *S. aureus* (MRSA).

The median age of children with *S. aureus* co-infection was older than children without *S. aureus* co-infection (10 years versus 5 years, $p < .01$) and children with co-infection were more likely to have pneumonia and Acute Respiratory Distress Syndrome (ARDS). Influenza strains isolated from these children were not different from common strains circulating in the community, and the MRSA strains have been similar to those associated with MRSA skin infection outbreaks in the United States.

Recommendations:

Health care providers should test persons hospitalized with respiratory illness for influenza, including those with suspected community-acquired pneumonia. Health care providers should be alerted to the possibility of bacterial co-infection among children with influenza, and request bacterial cultures if children are severely ill or when community-acquired pneumonia is suspected. Health care providers should be aware of the prevalence of methicillin-resistant *S. aureus* strains in their communities when choosing empiric therapy for patients with suspected influenza-related pneumonia. Clinicians, health care providers, and medical examiners are asked to contact their local or state health department as soon as possible when deaths among children associated with laboratory-confirmed influenza are identified.

CDC requests that state health departments report all cases of pediatric influenza-associated deaths to CDC through <http://sdn.cdc.gov> and that information about bacterial pathogens isolated from sterile sites and/or from sputum or endotracheal aspirates be completed on the Influenza-Associated Pediatric Mortality Surveillance System case report form. If the influenza death was complicated by *S. aureus* infection, state health departments are asked to please contact the clinical agency that reported the case to determine if the *S. aureus* isolate is available. CDC will receive *S. aureus* isolates in order to better characterize those *S. aureus* isolates from children who have died from influenza.

NOTE: At this time, the North Dakota Department of Health has not received any reports of pediatric deaths due to influenza. However, if influenza is suspected in the death of a child under the age of 18 years, please contact the North Dakota Department of Health at 800.472.2180.

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